

# THE HOMESTEAD WASTEWATER DISPOSAL ENVIRONMENTAL ASSESSMENT

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## 2.0 ALTERNATIVES

### 2.1 No-Action Alternative

Under the No-Action Alternative, The Homestead would continue to discharge wastewater on Parcels B and C (photos 7 to 10 in Appendix B and Figure 3). The question remains *how* that discharge would occur, either by spray irrigation or underground leach field. As discussed in the Background Section, the issue of whether or not “spray irrigation” falls under the definition of “seepage” as used in the easement language on Parcels B and C continues to be an important question that remains to be answered legally. Also, there is still a legal issue relating to the MDEQ-required 100-foot setback from the easement line, which the NPS Solicitor’s Office supports but the State Attorney General’s Office does not. If the standard setbacks do apply, then it is uncertain as to whether the existing parcels would be of sufficient size to treat the wastewater nutrient loads by spray irrigation, as proposed in The Homestead’s Irrigation Management Plan (IMP).

Utilization of Parcels B and C as underground leach fields would require a concurrent upgrade of The Homestead’s existing primary treatment facility, so that effluent would not impact down-gradient drinking water wells. The Homestead has not indicated that they are willing to implement this upgrade (Section 2.5.1). Therefore, the No Action Alternative will concentrate on the worst case scenario, which is spray irrigation modifications that would be made to both parcels to meet discharge permit requirements of the MDEQ, assuming that the setback requirement is not applied and spray irrigation is allowed. The modifications would include the following actions:

- Clear cut approximately 7.2 acres of existing trees on Parcel B, leaving slightly more than an acre of trees (about 20-foot wide) around the perimeter to act as a buffer. Harvestable timber would be recovered from the site, and the site would be cleared of all stumps, slash, and other debris.<sup>1</sup>
- Clear cut approximately 0.5 acres of existing trees on Parcel C. This is the offset area on the west side of the Parcel, within the easement, that was not timbered. Forested areas of at least 10 to 20 feet wide would remain all around the perimeter.<sup>1</sup>
- Perform cut and fill operations on both parcels, but primarily on Parcel B. Roughly 15,000 cubic yards of earthwork would be required to minimize steep slopes to less than 20% for mowing purposes. Earthwork would be balanced on site without importing or exporting soil.
- Replace the woodland vegetation removed from Parcel B with an orchard grass mixture having maximum nutrient uptake.
- Replace the existing alfalfa crop on Parcel C with an orchard grass mixture having maximum nutrient uptake.
- Install piping and irrigation spray heads.
- Pump water from The Homestead’s lagoon to Parcels B and C where the effluent would be evenly distributed over the grassy vegetation using fixed-riser sprinkler heads.
- Utilize existing access trails to each parcel to allow farm equipment access to the sites to harvest the crop.
- Install fencing with posted warning signs, around the entire perimeter of Parcels B and C.

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<sup>1</sup>According to Gosling Czubak Engineering, representing The Homestead, this is the minimum acreage required in order for the spray irrigation system to function properly.

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It is estimated that construction associated with the No-Action Alternative would require five to seven months to complete. Presumably, there would be some additional lag time subsequent to the completion of construction until the newly seeded grass crop would mature enough to be effective in nitrogen and other nutrient uptake. Additionally, this spray field system would only be operational during the growing season (May 1 to October 31). During the operational season, spray field operations would normally be five days per week depending upon weather conditions (rain and/or windy conditions could alter operations). Existing warning signs posted around the periphery of the spray fields would be maintained. Daily site inspections by The Homestead personnel would be required during the operational season. The grass crop would be cut and harvested three to five times per year.

**Estimated cost** (to The Homestead) for this alternative is \$300,000 (Gosling Czubak, 2004).

## 2.2 Alternative 1 (West Study Area)

Alternative 1 would include the establishment of an easement (approximately the same size as Parcels B and C combined) on existing NPS property for subsurface (*i.e.*, leach field) wastewater disposal located in the open fields north of Parcels B and C and west of Thoreson Road (photos 2, 4, and 5 in Appendix B and Figure 4a). This site is currently an open field not included for maintenance in the NPS *1991 Open Field Management Plan*. The field is, however, recommended for mowing as part of the Thoreson Farmstead, according to the NPS *2002 Draft Landscape Management Plan: Port Oneida Rural Historic District*. It has slopes of two to three percent, and an elevation change across the site of 23 feet. Approximately half of the easement (6 to 7) acres would be used in the installation of the leach field. The other half would remain an undeveloped reserve area in case of system failure in the future.

Piping to this site could be located in a variety of locations and would be specifically detailed in any legal easement transfer documents. The NPS and The Homestead would seek the least-impacting route. This subsurface piping would be placed approximately 6 to 7 feet below grade, and would require disturbing vegetation and soil to a width of 15 to 20 feet along the pipeline route. Existing rights-of way would be used wherever possible and combining the pipeline right-of-way with the construction/maintenance access road would be considered.

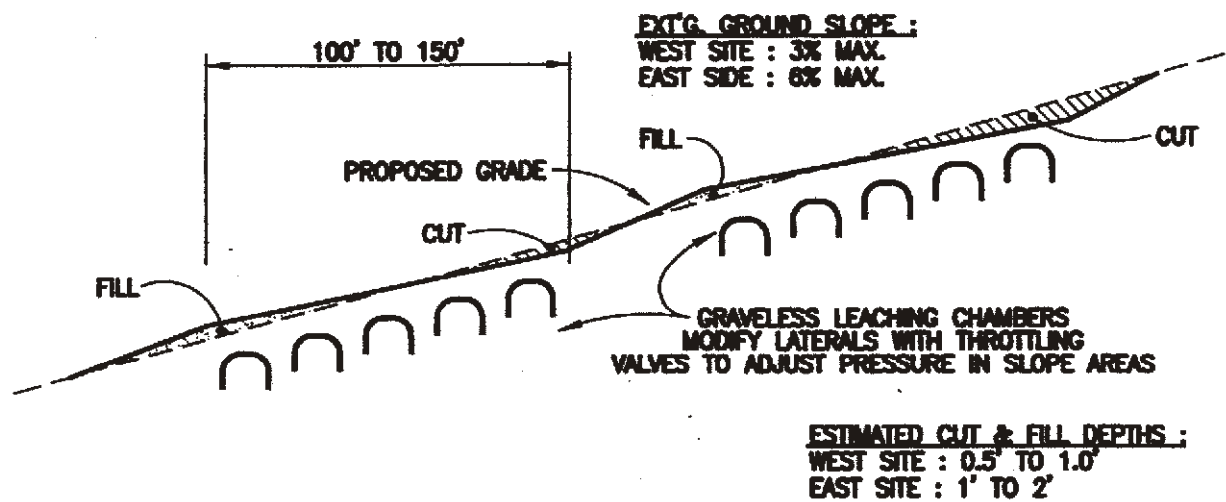
A system of underground dosing siphons would be placed on this easement and used to evenly distribute the wastewater within the leach field. Dosing siphons require no power or pumps; hence, they are low maintenance. The elevation of the West Parcel is 100 feet lower than the elevation of Parcel C thus contributing to the efficiency of the dosing siphons. A gravelless leach chamber system (Figure 4b) would be installed on the West Parcel. Gravelless leach chamber systems are more compact than typical trench systems and eliminate the need for hauling and placing drainfield stone. They consist of plastic chambers (in the shape of a cave) and have been used successfully at the Platte River Campground in the Lakeshore since 1998.

Construction modifications required to utilize the West Parcel would include the following:

- Cut and fill for regrading the site would require roughly 6,000 cubic yards of earthwork. There would be considerable excavation (3 to 5 feet below grade) needed to install the system and minor re-contouring to mimic pre-construction conditions on half of the parcel. The other half would remain an undeveloped reserve area in case of system failure in the future. Import or export of fill material may be required.

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### **MODIFIED DRAINFIELD CROSS SECTION FOR STEEP SLOPE AREAS**

NOT TO SCALE

Source: Gosling Czubak, 2004

**SLEEPING BEAR DUNES NATIONAL LAKESHORE  
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**FIGURE 4b**

**MODIFIED DRAIN FIELD CROSS SECTION FOR STEEP SLOPE AREAS**

**NOT TO SCALE**

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- Install, below grade, vent pipes for the underground dosing siphon tanks. These may be equipped with activated charcoal canisters to eliminate any odors that may be emitted at the vents.
- Install a small number of observation ports, at or below grade, across the leach field to monitor the underground system.
- Replant leach field surface field vegetation using species per stipulations/recommendations in the easement language.
- Establish construction access and maintenance access to the site.

It is estimated that construction of Alternative 1 would require 6 to 10 months. The leach field would be ready for use immediately after completion of construction, and it would be continuously operational throughout the year. Weekly visual inspections would be required along with quarterly system monitoring and inspections. There would be no special grass/vegetation cutting or maintenance requirements over the leach field area; however, woody vegetation would be cut as needed so as to not impact the drain field. No warning signs would be required with the totally subsurface system.

Alternative 1 would include the closure and removal of equipment on the existing spray fields on Parcels B and C and return of the easement to the NPS. The NPS would, in turn, provide a wastewater easement (including provisions for pipelines and access routes) for the West Study Area in place of the Parcel B and C easements. The details of the easement relocation would be contained in legal easement documents and would include details on the mitigation measures described above so as to minimize visual intrusions.

After Parcel B and C easements are extinguished, they would be restored. Access routes would also be restored to allow for natural revegetation of these areas.

**Estimated cost** (to The Homestead) for construction of this alternative is \$700,000.

## 2.3 Alternative 2 (East Study Area)

Alternative 2 would include the establishment of an easement (approximately the same size as Parcels B and C combined) for a leach field located in the open fields north of Parcels B and C and east of Thoreson Road on existing NPS land (photo 6 in Appendix B and Figure 5). This site is currently an open field and is traversed by the Bay View Trail. The field is not included for maintenance in the NPS 1991 *Open Field Management Plan*. The field is, however, recommended for mowing as part of the Thoreson Farmstead, according to the NPS 2002 *Draft Landscape Management Plan: Port Oneida Rural Historic District*. It has slopes of three to six percent, and an elevation change of 35 feet across the site. Approximately half of the easement (6 to 7) acres would be used in the installation of the leach field. The other half would remain an undeveloped reserve area in case of system failure in the future.

Piping to this site could be located in a variety of locations and would be specifically detailed in any legal easement transfer documents. The NPS and The Homestead would seek the least-impacting route. This subsurface piping would be placed approximately 6 to 7 feet below grade, and would require disturbing vegetation and soil to a width of 15 to 20 feet along the pipeline route. Existing rights-of-way would be used wherever possible and combining the pipeline right-of-way with the construction/maintenance access road would be considered.

Due to the distance involved, an underground intermediate pump station would be located somewhere along the pipeline corridor to move wastewater from Parcel C to the new parcel

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(Figure 5). The dosing pump, located on the parcel (Figure 5) would provide equal volumes of water to each zone within the gravelless leach chamber system installed on the East Parcel. The dosing pump system would require installation of an underground dosing tank and pump vault. Electrical power would be needed along with an aboveground control panel, painted a neutral color to blend with the landscape. A gravelless leach chamber system (Figure 4b) would be installed on the East Parcel. Gravelless leach chamber systems are more compact than typical trench systems and eliminate the need for hauling and placing drainfield stone. This system would include individual throttle valves to minimize earthwork in steep slope areas.

Construction modifications required to utilize the East Parcel would include the following:

- Cut and fill for regrading the site would require roughly 12,000 cubic yards of earthwork. There would be considerable excavation (3 to 5 feet below grade) needed to install the system and subsequent re-contouring to mimic pre-construction conditions on half of the parcel. Leach field trench elevations would be modified in steep slope areas to follow contours. The other half would remain an undeveloped reserve area in case of system failure in the future. Import or export of fill material may be required.
- Install two underground pumping stations with aboveground control panels. The control panels, roughly 2 feet by 4 feet in size, would be painted a neutral color. Electricity would be provided underground from the overhead line nearby.
- Install, below grade, vent pipes for the underground intermediate pump station and the underground dosing tank. These may be equipped with activated charcoal canisters to eliminate any odors that may be emitted at the vents.
- Install a small number of observation ports, at or below grade, across the leach field to monitor the underground system.
- Replant leach field surface vegetation using species per stipulations/recommendations in the easement language.
- Establish construction access and maintenance access to the site.

It is estimated that construction of Alternative 2 would require 6 to 10 months. The leach field would be ready for use immediately after completion of construction, and it would be continuously operational throughout the year. Weekly visual inspections would be required along with quarterly system monitoring and inspections. An alarm system (lights or telemetry system) would be installed at the intermediate pump station and the dosing pump system. There would be no special grass/vegetation cutting or maintenance requirements over the leach field area; however, woody vegetation would be cut as needed so as to not impact the drain field. No warning signs would be required with the totally subsurface system.

Alternative 2 would include the closure and removal of equipment on the existing spray fields on Parcels B and C and return of the easement to the NPS. The NPS would, in turn, provide a wastewater easement (including pipelines and access routes) for the East Study Area in place of the Parcel B and C easements. The details of the easement relocation would be contained in legal easement documents and would include details on the mitigation measures described above so as to minimize visual intrusions.

After Parcel B and C easements are extinguished, they would be restored. Access routes would also be restored to allow for natural revegetation of these areas.

**Estimated cost** (to The Homestead) for construction of this alternative is \$950,000.

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## 2.4 Environmentally Preferred Alternative

National Park Service policy requires the identification of an Environmentally Preferred Alternative or Alternatives. The Environmentally Preferred Alternative is “the alternative that causes the least damage to the biological and physical environment; it also means the alternative that best protects, preserves, and enhances historic, cultural, and natural resources.” *It is not necessarily the NPS Preferred Alternative and, in fact, no NPS preferred alternative is suggested at this time.* The Environmentally Preferred Alternative is determined by applying the criteria suggested in NEPA (listed below), which is guided by the Council on Environmental Quality (CEQ). The CEQ provides direction that “...the Environmentally Preferred Alternative is the alternative that will promote the national environmental policy as expressed in NEPA’s Section 101.” In the National Park Service, the No-Action Alternative may also be considered in identifying the environmentally preferred alternative.

***Criterion 1—Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.***

***Criterion 2—Assure for all generations safe, healthful, productive, and aesthetically and culturally pleasing surroundings.***

***Criterion 3—Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.***

***Criterion 4—Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice.***

***Criterion 5—Achieve a balance between population and resource use that will permit high standards of living and wide sharing of life’s amenities.***

***Criterion 6—Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.***

Because the effects of each of the alternatives are relatively similar in terms of these six criteria, all three have been selected as Environmentally Preferred Alternatives.

## 2.5 Alternatives Considered but Dismissed

### 2.5.1 Improvement of Primary Treatment

An alternative suggested in the scoping process was to have The Homestead upgrade their primary treatment facility such that the effluent might not require disposal system improvements in order to meet DEQ standards. While this is an option that the NPS would certainly consider, it is beyond the authority of the agency to compel The Homestead to do so. The Homestead has not indicated that they are willing to implement this option. Therefore, this alternative is dismissed as a feasible alternative.

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### 2.5.2 Use of Other Sites in the Area for a Wastewater Disposal Site

One possible alternative involved the construction of subsurface leach fields for Parcels B and C to replace the existing spray systems. However, since these parcels do not qualify for the MDEQ “venting rule” which allows leach fields to be used (without concurrently upgrading the primary treatment system), this alternative is dismissed as a feasible alternative.

Another possible alternative that was considered was a wastewater disposal site on NPS land along both sides of, and across M-22 from, the resort entrance (*i.e.*, The Homestead Road). Because there are numerous existing private wells downgradient of this area, there is no advantage to this site over the existing locations in terms of allowing The Homestead to meet DEQ standards. Therefore, this alternative is dismissed as a feasible alternative.

Another alternative examined early in the internal scoping process was the possible construction of a leach field in the Bay Mountain area within The Homestead’s existing property boundary. However, this alternative was dismissed as infeasible based on very steep slopes, patchy, clayey soils with poor percolation rates, and general soil instability.

A possible approach of using combined portions of the East and West Study areas was explored, but found infeasible because of additional expenses and the general unacceptability to the NPS of disturbing two separate areas.

Lastly, there was a possible leach field location considered on NPS land between Parcel B and the East Study Area. This parcel is known as the South Study Area and is approximately 3.6 acres in size (see Figure 3). Although the soils and percolation qualities on this parcel were better than at the West Study Area or the East Study Area (personal communication with Gosling Czubak Engineering, 2004), this alternative does not contain enough area to support a drain field of sufficient size. Therefore, this alternative is dismissed as a feasible alternative.